

College of Sciences, Technology, and Health (CSTH) Programs

Program Improvement Report - Summer 2019

This summary report describes the evidence that assessment results are being used for program improvements in the CSTH academic programs, as reported by the departments' Assessment of Student Learning Plans (ASLP) forms for the 2018-19 academic year.

Biology

In the Biology program, most of the assessments have been completed at the course level by individual faculty members. However, plans are underway to develop improved methods of embedded assessment and institute a regular review process covering our department-wide learning outcomes. Also, we will appoint a committee to continuously review the learning outcomes and progress.

Summary: The Biology department will make program-level changes in the upcoming year by developing an ongoing and systematic assessment process to review their student learning outcomes, beginning with revising their course-embedded assignments.

Chemistry

In the Chemistry department, we discuss the program, expected outcomes, and curriculum annually. The assessment data used during the 2018-19 academic year included:

1. Classroom response systems (clickers and/or TopHat)
2. Observations of student behavior during group activities in the classroom and laboratory
3. Entry vs Exit scores on content appropriate questions
4. Capstone research experiences and presentation on work performed
5. Percentiles achieved on National American Chemical Society standardized final exams.

We are updating / revising the 100 level laboratory manuals and will add a practical exam requirement to the course. Implementation planned for fall 2019.

The Department has purchased a computer and updated modeling software to enhance student learning in this sophisticated realm of molecular modeling.

Grading rubrics are being developed for CHY 114, and are used in CHY 470 (Capstone). Preliminary plans are underway to develop a one semester organic chemistry course better suited for the general biology students.

Summary: The Chemistry department is implementing several program-level changes; such as: updating their molecular modeling software, revising their lab manuals, developing grading rubrics for an entry course and the capstone, and adding a new course.

Computer Science

Our assessments in the Computer Science program include mostly direct measures using rubrics for specific assignments or exam questions designed to evaluate achievement of a specific learning outcome. The details of the specific assessment instruments and their rubrics are documented in the submission to the ABET visiting team.

Individual faculty members interpret the higher level outcomes in the context of the specific class they are teaching to more specific outcomes for the class's material and design instruments and rubrics for the outcome.

The individual assessment instruments are, of course, implemented when the class is delivered, according to the matrix given above. All assessments use scoring rubrics and are normalized for the convenience of the ABET examiners to a scale of 1 to 5 for Poor, Fair, Good, Very Good, Excellent (or some comparable nomenclature). The courses which assessed outcomes during the 2018-2019 academic year are COS 360(fall), COS 450(fall), COS 398(spring), and COS 485(spring).

At the end of each year we have a department meeting where we share and discuss our assessment results and discuss plans for future changes. This meeting has been an important and useful opportunity for sharing ideas and experiences. Individual faculty members share their assessment results and identify specific problems and their intended responses.

Our changes are generally about spending more course time on difficult topics or modifying the materials or learning activities. More recently several faculty members have observed that students are not accomplishing as much of the work as they have in the past and we may be reducing the amount of work we assign.

The Dean intends to equip two teaching labs which could have a huge impact on student learning. We have added labs to many of our classes and our experience has been that more active learning methods increase engagement and learning. If we are able to conduct more of our meetings in labs it could have a dramatic impact.

Final conclusions from this year's assessments are not yet available, but we intend to review the curriculum of the first two years to redistribute the content (as we have noticed a big jump between the first semester course and the second).

Summary: The Computer Science department has recently made a significant program-level change which included adding labs to some of their courses to help students increase their class learning and engagement. In addition, they have made course-level changes, which included modifying the learning activities in some courses. In the upcoming year, the department plans to make some curriculum changes once reviewing this year's assessment results.

Engineering

In the Engineering department, we use course embedded assessments in multiple required courses, then compile the data and review collectively at the end of May (annually). All departmental assessment activities and student learning outcomes are being reviewed.

Course-level assessment activities occur in the selected courses and the mapping of student outcomes to each course (as shown on our curriculum map). Such activities are required by ABET and have been a feature of our accreditation process for several past cycles.

The current assessment activities were implemented in 2008, updated in 2014, and updated again in 2018 to reflect the modified list of ABET approved outcomes. Each instructor uses course specific, well documented assessment vehicles and metrics to measure outcome attainment by students. Courses are updated regularly, as stated in our ABET accreditation report.

Summary: The Engineering program makes ongoing course-level changes per their accreditation guidelines. Currently, they are reviewing all of the recent assessment activities, and will make adjustments in the course assessments, as needed in the upcoming academic year.

Environmental Science

The Environmental Science program has both summative and formative assessments. All assessments are course-embedded and regularly include in-class activities, written and on-line quizzes, learning portfolios, final projects, oral presentations, two-minute questions, reflective memoranda, instructor observation, and group and individual reports.

We use the USM course evaluation forms at the discretion of individual faculty, and augment course evaluations with Student Assessment of Learning Gains (SALG, <http://www.salgsite.org/>). SALG is a useful tool for formative and summative assessments. It is a free on-line assessment tool of student perceptions of science learning. Faculty also use on-line surveys, portfolios, concept maps, reflection papers, minute papers, peer class observations, and a variety of other techniques.

Assessment and evaluation also occurs through our curriculum design. Our senior capstone course, environmental impact assessment (ESP 401) acts as an assessment of the student's ability to put together what he or she has learned in previous courses and apply that to a group project. They choose their area of emphasis and they choose their project. Selected courses (provided on our matrix) builds student knowledge, skills, and abilities towards the outcomes or proficiencies for the respective

academic ranking of freshman, sophomore, junior, and senior in the major. We address service learning and civic engagement, with examples of student assignments and sand projects that document or assess achievements in those areas.

Based upon these assessment results, we hold periodic curriculum review workshops to evaluate our curriculum, goals for each student year, and decide upon changes. We created an ESP 389 Teaching Practicum course to nurture student leadership abilities and to help prepare students to be competitive in obtaining graduate teaching assistantships. This provides a mentored hand-on experience to help a student explore the role of teaching in the discipline, and leadership among their peers. We also participate in the Learning Assistant program.

After our program self-study, we revised our course syllabi to ensure that all syllabi have concrete learning objectives that are measureable and assessable.

All majors have completed an introductory orientation course, ESP 150 Field Immersion. The entire department faculty participates in delivering it, with one taking the lead as the instructor of record. We also hired two advanced students as teaching assistants, modeling our value for student learning. This course occurs regularly in September – one long weekend, with an online component, and all freshmen and transfers take it. The course has two main objectives: to set up the basis for building community and provide basic skill-sets (compass reading, tree identification, Map/GPS usage, canoe use) for outdoor environmental education. After each offering, we debrief and decide what could be done to improve it. This debriefing is informed by the results of a survey given to the students at the end of the field session.

Summary: The Environmental Science department recently made a curriculum-level change based upon their assessment results (i.e. capstone assignment data); that is, the creation of a teaching practicum course to help prepare students for leadership and teaching assistantships. In addition, course-level changes were made by revising all their course syllabi to include assessable learning outcomes.

Exercise, Health & Sport Sciences

We have three degree programs in the Exercise, Health & Sport Sciences (EHSS) department. For our programs, the assessments include: passing a national certification examination (administered at the end of the program), and completion of the capstone/internship course (which includes a portfolio and graduation survey).

Our program faculty have ongoing discussions with the departmental curriculum committees to review the routine course offerings, pre-requisites, course content, and sequences of classes. Improvement in the curriculum is based on assessment data and national trends. Course content is routinely updated by individual faculty and department curriculum committees.

Additional course assessment activities completed during the past academic year included the following.

- 1) The inclusion of a behavior modification exercise and reflection paper in SPM 219 (Lifetime Fitness and Wellness). A grading rubric was created for this assignment and shared with students prior to delivery.

- 2) A community-based project was required for the internship experience (SPM 495) in the Exercise Science major. Students completed a project that will benefit their community-based host organization. The project was evaluated by the internship site supervisor and reviewed as part of the internship portfolio review process. Specific improvements for the upcoming year will include changes in the prerequisites for all courses (updating the 2018-2019 catalog).

Summary: The EHSS department will make program-level changes in their curriculum for this upcoming academic year (i.e. updating the pre-requisites for all their courses), based upon their national exam data and national trends. Recent course-level changes included creating a grading rubric for one of their entry-level courses, and creating a community project for their internship course. Additional course changes may be updated by their individual faculty members and the departmental committees, based upon ongoing faculty discussion.

Linguistics

Our Linguistics program is currently in the process of submitting our renewal for accreditation for the ASL/English Interpreting Concentration of the Linguistics major. Our effort during the past year was to upgrade the requirements for interpreter licensure in the state of Maine.

The assessments administered during the fall and spring semester included administering the ASLA (American Sign Language Assessment) exam and a Practicum interview (covering nine program outcomes). The results for all students were reviewed by the director of the ASL/English Interpreting program, the coordinator of the ASL program, and other interpreting and ASL faculty, at the end-of-the-year meetings. The results are correlated with students' performance in the Practicum and in the Advanced ASL courses and have informed changes to the curriculum, based on the results.

Previously, we experimented with an approach to students (those who do not test into practicum but are close). The experiment consisted of allowing them to do the practicum with the stipulation that they would focus on certain skills. Performance of the students who were given this option, fell sufficiently below others who had met the requirements for admission to practicum. We made the decision that in future years the entry requirements for practicum will be strictly followed without exception. This year that policy was strictly enforced and the level of practicum students was more consistent and promising of successful outcomes.

During this past year, we experimented with allowing students who did not pass the NIC written test or the ASLA exam, to fulfill those requirements anytime up to the beginning of Practicum I (at the beginning of Spring semester). The students who passed these tests late, as a whole, were weaker than

the other students in the class, but did pass Practicum. We have decided to accept these scores as long as they are received before the Practicum 1 experience.

Also, we experimented with allowing a student who had failed the ethics component of the Practicum interview, but had passed the ASLA exam and NIC written exam late to enter practicum. This outcome, while the student passed, was not successful. Placements had to be modified, etc. Going forward, individuals who do not pass the Practicum Interview- ethics component will not be admitted to Practicum the following spring semester.

Recently, we have also modified the curriculum for LIN 434 (Advanced Interpreting and Research), a course that isn't required for the major, for students who do not test into practicum. The course has students focus on their ASL/interpreting enhancement skills and preparation for the RID written exam. This year, when it was fully implemented, it was very successful and we have decided to continue this practice. We have also allowed students completing Pre-Practicum to have their prerequisites assessed early, leaving only the ethics component for the Practicum Interview.

We require a B or better plus an ASLA/ASLPI >2 for entry into intermediate interpreting classes and advanced ASL classes. This past year we had several students who passed their ASL 202 class with only a B-. Rather than accept the B-, we have encouraged these students to work on their ASL skills over the summer. We have found an on-line tutor (a previous USM instructor) who is experienced and can be hired for this purpose. Verification from this instructor that the benchmarks have been met for a B or re-assessment of skills prior to the fall semester will allow students to enter the next level of courses.

Another change being made is in LIN 185 (the foundation course in the major). We are working on improving it in various ways and adding more assessments. This year we had the students take an ungraded quiz on the first day of class, and they retook at the end of the semester for a grade. The quiz covers general linguistic concepts. We now have two semesters worth of data, but both times, there was a significant improvement between the pretest and the post-test, with improved scores for almost every student and on all of the questions. We also included some additional features, such as Zoom review sessions to the online course, which has had a high DFW rate. The trend shows we are moving in the right direction, with a decreased DFW rate and higher grades among the students who complete the course.

Summary: The Linguistics department is currently making several program-level improvements this year, based upon the updated national and certification requirements for the ASL licensure in the state. The changes include: to update the practicum requirements and to modify the curriculum. Also, after reviewing exam scores and course grades, they are adding additional learning activities in their foundations course.

Mathematics & Statistics

In the Math department, due to the high number of poor grades (DWLF's) in our 100-level courses, we are working on our progress in our entry-level math courses for majors and non-majors. Our program has begun to provide and encourage more professional development opportunities for both part-time and full-time faculty who teach our 100-level courses.

We piloted a new course, MAT 100, for those students who are under-prepared for college-level mathematics. The content of this course included teaching students to have a growth mindset towards learning mathematics and study skills, in addition to foundational level content. A sub-group of faculty in the department met to review and map out the curriculum in MAT 101, 108, and 140 to reduce the number of topics taught in each course with the goal of teaching less content in a deeper way. We implemented several content changes in these 100-level courses for this upcoming year in order to reduce the number of poor grades.

Summary: The Mathematics program made a program-level change this year by providing more professional development to their faculty, after reviewing the course grade data in entry-level math courses. In addition, they made course-level content changes in their 100-level courses which creates a better math pathway for math students.

Physics

The Physics program reviewed and re-evaluated their outcomes and assessment methods during the past year. Two (out of their four) program outcomes were assessed his past year; which included examining whether their students could “plan, execute and report the results of an experiment or investigation, and to evaluate results critically with predictions from theory.” The assessment method included using an evaluation rubric during the introductory lab course and the capstone course.

Moving forward, the department is currently creating a plan to implement more formal assessment techniques in their courses. One of the changes made was to measure their outcomes by administering the ETS Major Fields Test in Physics to all majors upon entry and as an exit exam.

Summary: The Physics department made important progress this past year with their program-level assessment process by revising their learning outcomes and assessment methods. This past year, they created grading rubrics for their intro lab course and their capstone. This year, they plan to implement a formal assessment plan to measure their outcomes using a standardize exam.

Psychology

According to the Psychology department's self-study, the learning outcomes for the psychology majors are: "to demonstrate quantitative literacy, develop critical thinking skills, and to monitor their own meta-cognitive awareness. In the past academic year, the psychology majors were assessed in the PSY 206 (Experimental Methodology Lab) by completing three APA style empirical reports, along with an anonymous questionnaire reflecting on their experience with each report.

The results of the assessment data showed that some students were weak in statistical proficiency, and had difficulty in writing particular sections of their reports. On the other hand, the student's self-reflection of the course assignments were mostly positive. Changes will be implemented in the next course to address these weak areas in the course: such as, having a tutor available to assist the students with writing the report sections, and to have discussion days about empirical reports in the PSY 205-lecture course (which PSY 206 lab students are co-enrolled). In addition, making the stats preparation for PSY 206 more homogenous.

With the recent changes in the Psychology department (several retiring faculty), reviewing the program outcomes is on the agenda for the fall 2019 semester and to adopt ways to embed the assessments in selected courses. A clearer structure will be planned by the end of the 2019-2020 academic year.

Summary: The Psychology department is currently making program-level changes this upcoming year. They plan to review their previous program-level outcomes and develop course-embedded assessments for selected courses in the major. Course-level changes are planned next year for the experimental methodology course, based upon student feedback.

Recreation & Leisure Studies

The Recreation & Leisure Studies (RLS) program faculty (full-time and part-time) annually review the program assessment process. Along with several direct measures from our courses, the NCTRC (National Council for Therapeutic Recreation Certification) examination results and the clinical case study presentation that a student completes at the end of the semester, are the assessment data used for examining teaching competence and student learning outcomes. The indirect measures (i.e. student course evaluations, student interviews, focus groups, and examining course grades) are also utilized to improve student learning. In addition, our partnering agencies provide feedback on student service learning competencies.

Based upon the assessment results, the following changes are currently being made. Our courses are being screened so that the foundational courses are offered more than one semester per year, and additional faculty have been secured to allow for students to have more options. Graduate Planners have been designed to map out the student's four-year academic schedule so that classes can be taken

when they are offered, as some courses are only offered once a year. A course that had been dropped due to lack of faculty, REC 332, was found to be instrumental in preparing students for the more rigorous courses, REC 382 and REC 383, and subsequently brought back in as a pre-requisite for REC 382 and REC 383. Through the agency assessment of students at internship sites where documentation is crucial, it was found that USM Therapeutic Recreation interns were deficient in some fundamental skills. Also, the program faculty are meeting to review the current textbooks as well as new textbooks, and to update the syllabi for clarifying learning objectives and to add depth to the curriculum (per student feedback). Grading Rubrics are used in most courses, and a template has been distributed to all instructors.

Summary: The RLS department is currently making program-level improvement changes which include providing more foundational courses each semester and adding pre-req's to a couple of courses (based upon assessment data). Additionally, the faculty members are reviewing textbooks, updating syllabi to include learning objectives, and using more grading rubrics to improve the curriculum.

Technology

The Technology program uses the ITT 460 Capstone course for program assessment, and program faculty regularly reviews capstone projects. The senior level course integrates curriculum content from previous courses to create a capstone experience with a focus on project management and professional communications. Students will use project management and professional communication techniques to select, complete, and report on an individual or team project that demonstrates achievement at the application and syntheses level.

One of the changes that was implemented in the spring 2019 semester, was that the rubric (the assessment metric for identifying outcomes performed by the student's poster session) was put on the Blackboard site for the course. These results are currently being reviewed. The program faculty are considering the application of similar objectives in the STH 440 Internship course.

Summary: The Technology department made a program-level change during this past year by deciding to post the scoring rubric to their Blackboard site; i.e. the rubric is used to assess the student's senior project in the capstone course. The department is still reviewing their assessment results for the spring semester. However, for this upcoming year, the program faculty are discussing making course improvements to the internship course.

School of Nursing

The Nursing faculty are currently engaging in the self-study assessment process for our reaccreditation visit in February 2020. As part of that process, we are reviewing our student learning outcomes and revising our systematic plan of evaluation. As required by our accreditor (CCNE), we consistently track NCLEX-RN pass rates (undergraduate students), certification rates (graduate students), completion

rates, and employment rates. This year, part of our assessment process included working on Standard IV; therefore the faculty have discussed the information on licensure and certification results on an ongoing basis when the data was available, during faculty and committee meetings.

According to the antidotal input from our community, there is a need for an Adult Gerontology Acute Care NP program. This was related in part to a clarification at the national and state level that NPs should only work within the role for which they are prepared. Many primary care NPs have been hired to work in acute care settings that are outside their scope of practice based on their role preparation.

As part of our self-study process, we are looking at our exam data and our program, student and faculty outcomes. We will be assessing these and determining if there are changes that need to be made based on the assessment.

Summary: The Nursing department will make program-level changes for this upcoming year, as they are updating their program assessment process, as required by their accreditation. The Nursing faculty are reviewing their national exam data and their outcomes and will make the necessary improvements in the program and at the course-level.
